

A Walk Through History

Science

1928

Scientists synthesize CFCs.

1973

Scientists detect CFCs in atmosphere.

1974

Nobel prize winners Molina and Rowland discover that CFCs can break down stratospheric ozone.

1975

Scientists discover that bromine, used in fire-retarding halons and agricultural fumigants, is a potent ozone-depleting substance.

1985

British Antarctic Survey team discovers Antarctic ozone hole (7.3 million square miles), marking the first evidence of stratospheric ozone depletion. Scientific research reveals stratospheric ozone layer depletion has adverse environmental and human health effects.

1991

International scientists agree that CFCs are depleting the stratospheric ozone layer in the northern and southern hemispheres.

Action

1975

SC Johnson announces corporate phaseout of CFCs as aerosol product propellants.

1976

United Nations Environment Programme (UNEP) calls for an international conference to discuss an international response to the ozone issue.

1978

U.S. bans non-essential uses of CFCs as a propellant in some aerosols (e.g., hair sprays, deodorants, antiperspirants). Canada, Norway, and Sweden follow with a similar ban.

1981

UNEP develops a global convention to protect the ozone layer.

1987

Twenty-four countries sign the Montreal Protocol on Substances That Deplete the Ozone Layer.

1989

All developed countries that are parties to the Montreal Protocol freeze production and consumption of CFCs at 1986 levels.

1996

U.S. eliminates production and import of CFCs, carbon tetrachloride, trichloroethane, and hydrobromofluorocarbons.

1994

U.S. eliminates production and import of halons.

1993

DuPont™ announces that it will halt its production of CFCs by the end of 1994.

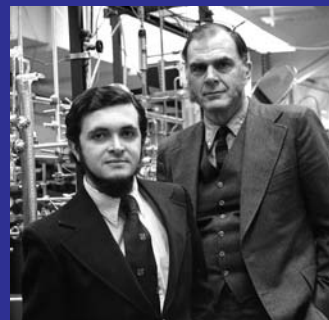
1992

U.S. announces an accelerated CFC phaseout date of December 31, 1995, in response to new scientific information about ozone depletion.

1990

Clean Air Act Amendments, including Title VI for Stratospheric Ozone Protection, signed into law.

COLLABORATORS IN ATMOSPHERIC CHEMISTRY



In the 1970s, chemists Sherwood Rowland and Mario Molina discovered that CFCs contribute to ozone depletion. The two collaborators theorized that CFC gases react with solar radiation and decompose in the stratosphere, releasing chlorine atoms that are able to destroy large numbers of ozone molecules.

Their research was first published in *Nature* magazine in 1974. The National Academy of Sciences concurred with their findings in 1976, and in 1978 CFC-based aerosols were banned in the United States. Further validation of their work came in 1985 with the discovery of the ozone hole over Antarctica. In 1995, the two chemists shared the Nobel Prize for Chemistry with Paul Crutzen, a Dutch chemist who demonstrated that chemical compounds of nitrogen oxides accelerate the destruction of stratospheric ozone.

2000

Japan Meteorological Agency reports the hole in the stratospheric ozone layer over the Antarctic is at its largest to date—more than twice the size of Antarctica.

2006

The ozone hole is reported to be the biggest ever, exceeding that of 2000.

2060-2075

Earliest timeframe projected for the ozone layer to recover.*

2004

All developed countries reduce consumption of HCFCs by 35 percent from baseline levels.

2010

All developed countries reduce consumption of HCFCs by 65 percent from baseline levels.

2015

All developed countries reduce consumption of HCFCs by 90 percent from baseline levels.

2030

All developed countries scheduled to complete the phaseout of ozone depleting substances.

2040

All developing countries that are parties to the Montreal Protocol scheduled to completely phase out HCFCs.

2002

All developing countries that are parties to the Montreal Protocol freeze methyl bromide production at 1995–1998 average level.

* Executive Summary, WMO/UNEP Scientific Assessment of Ozone Depletion: 2006, Scientific Assessment Panel of the Montreal Protocol on Substances that Deplete the Ozone Layer, August 18, 2006. p. 7.